

Good evening. For those of your wondering why the base historian is addressing you tonight, there are three reasons. The first is the *raison d'être* [I never pass up a chance to use one of the 3 phrases I learned in four years of French courses] of all after dinner speakers. It is neither to inform nor to entertain. It is health. We make sure you do not jump up from the table but stay seated long enough for proper digestion. The other reason is to give you some idea of the how Picatinny came to be the installation you are at today. The third is I find the subject interesting and am hoping some of you might end up agreeing with me. If not, well, as I said, sitting there is good for your digestions.

After the Civil War, actual fighting by the U.S. Army mostly happened out West, against Native Americans. However, the country, or the people in it who actually gave a little thought to military affairs, feared attacks by foreign navies on its East Coast cities. This led the army to put much of its money and energy into coastal defense. Some you may know the forts in the New York harbor. Well, the guns for these forts used gunpowder. However, you do not store the amounts of gunpowder needed for such guns (hundreds of thousands of pounds) in large, metropolitan areas. Seems blowing up New York City would have been bad politics or something. At least, it seemed a bad idea to New Yorkers. In New Jersey, opinions may differ.

To store this stuff, the army needed a site which was rural, had good rail connections to the East Coast, and also had hills. It began the search right after the Civil War, and, by 1879, after investigating the problem for a mere 14 years, it thought it had found the ideal place – near Peekskill, New York. However, the people up there wanted more money. The government did not have it, so it looked to the second choice –a little

to the south. At the time, this area was very rural, the iron industries had given it a very good rail network into which the Army could plug, and it had hills.

The government was not unique in appreciating this area's fitness for explosive works – fitness for a home for places likely to blow up. In the early seventies the Giant Powder Company set up a works in what was then McCainville and is now Kenil. In 1882, an outfit called American Forcite set up a large manufacturing and research works on the southeast shore of Lake Hopatcong.

The initial land purchases involved 1866.13 acres which the Army acquired for a total sum of \$62,750.00. When I came to this area some dozen years ago, land prices were somewhat higher.

The installation opened as the Dover Powder Depot on September 6, 1880, the name coming from the nearest sizable town. However, the first commander, Major Francis Parker, although he lived in Dover while the base was under construction, worried over the name. As he pointed out to the United States Army Ordnance Department in Washington DC, the base was not in Dover. This indicates a capacity for logic rare in the bureaucratic world. Also, there was a rather suspect patent medicine of the time called Dover Powders and Parker wanted to avoid any confusion.

He suggested several alternatives, including **PICATINNY** – after a mountain peak on the installation. Evidently, the Lenape word struck a poetic fancy down in the Capitol, because on 10 September 1880, 4 days after opening, the name changed to Picatinny Powder Depot. As for the meaning of the name, the most likely explanation is Rugged Cliff by Water, a rather accurate description of the peak.

The payroll for the first month of operations – September 1880 – ran to a total of \$1,521.65. Highest paid were a civil engineer and a superintendent. Each received \$150 for the month. Fairly skilled workers such as stone masons received around \$2 to \$2.25 per day. General laborers from \$0.75 to \$1.25 per day.

The government received some good work for its money. The first building the Army put up still stands. It was a magazine for storing sodium nitrate. Now it is an engineer's shop.

Well, Picatinny went along its own quiet way storing powder for a couple of decades. In 1903, it began loading explosives to shells. The basic explosives of the time were TNT for high explosive shells and the less sensitive explosive D or Dunnite for armor piercing shells. Dunnite takes his name for Major Beverly W. Dunn, who did much to promote Army adoption of this ammonium picrate based explosive. The chief rival of Dunnite, or ammonium picrate, was Maximite, which used picric acid and was the invention of Hudson Maxim of Lake Hopatcong, New Jersey. Maxim had cordial relations with many Picatinny scientists and engineers, but he, despite becoming a very rich man due to his explosives, he never really got over the rejection of Maximite.

Then, in 1907, the army established a manufacturing plant for smokeless powder – so named because it is neither smokeless nor a powder – at Picatinny.

Now the army wanted its own powder plant for 3 reasons:

1. The Spanish-American War, while too short for shortages to develop, got the high brass to worrying about the possibility of them arising in case of a major war.
2. There was a good deal of worry about monopoly in the explosives industry, i. e. Dupont.

It would be only a few years -- in 1912-13 -- until the government split Dupont in three companies -- DuPont, Hercules, and Atlas. This area was a scale model of the change. A research facility in Pompton Lakes stayed Dupont, the works in Kenil went to Hercules, and the American Forcite works went to Atlas. These were all very active places at the time, but now, the Pompton facility is pretty much inactive, Roxbury Township and Hercules are arguing cleanup of the Kenil site, and the Atlas works moved from Lake Hopatcong to Pennsylvania about 1930.

The third reason the Army wanted its own powder factory was: The Navy already had its own powder factory at Indian Head, Maryland.

Oh, by the way, if you're tempted to weep for poor Dupont, well guess whose people and expertise Picatinny hired to set up its new production lines. In an in-house history of its relations with the government, DuPont told how it had even helped in the selection of the site, leased powder cutting equipment to Picatinny, and received royalties from both small arms and cannon powder cutting. The Picatinny plant never made enough powder to threaten private industry, but it gave the government an idea of the real cost of powder manufacture.

The army put the plant at Picatinny for one big reason, it already owned the place.

A powder factory is a technically sophisticated operation in and of itself, especially when you consider its testing and quality control labs. So, while not a research facility, Picatinny started to acquire some of the technical equipment such a facility would need. In 1911, the Army established a school to train its officers in new types of explosives at Picatinny and so increased the arsenal's supply of scientifically inclined personnel. Still, the start of active research into new types of ammunition would wait the

end of World War I. During the war, the arsenal contented itself with making powder and training officers.

The working population of the arsenal had grown slowly prior to the war, from 150 in 1882 to 200 in 1913. For rural New Jersey in the early years of the century, this was not small. However, the war swelled this to 1,800 in 1918.

After the war, Picatinny began its work as a research activity. Its main job was the propellants and explosives of large caliber armaments and fuzes. It took over the fuze research from a place called Frankford Arsenal outside Philadelphia. Once you have a fuze and an explosive, you have most types of ammunition.

The vagaries of the postwar Army budgets brought it down to 600 in 1919 and up to 1,000 in 1920 and down to 530 on 10 July 1926. Now we are at the most famous date in Picatinny history, but I have to backtrack a bit.

Remember what I said about not having large quantities of explosives near major metropolitan areas. Well, in 1890, the Navy had a fair supply of ammunition in New York Harbor. Actually, on Ellis Island. When the immigration receiving station moved to the island from the Battery area of Manhattan, the Navy had to get out. So, it leased some 400 hundred acres of Picatinny from the Army for the Lake Denmark Naval Ammunition Depot. Unlike Picatinny, it did not go into manufacturing or research but remained a storage depot.

For 36 years the Navy was a reasonably well behaved tenant. Then came 10 July 1926. To explain what happened then, I must go back to the end of World War I. Germany surrendered in November 1918 primarily because of social and economic collapse under the strain of the war. The surrender really surprised the allies. They were

planning a major campaign for 1919. This meant an awful lot of ammunition in the pipeline, most of it in East Coast ports. The only places to store large caliber shells were Picatinny and Lake Denmark.

So the government stored it, or rather DUMPED it.

A man whose uncle worked at the Arsenal at the time remembers riding around the installation as a boy and seeing the roads lined with artillery shells. Those rounds under cover were usually in temporary structures, thrown up quickly and too close together. Hang around the government for only a short time and you will learn it has a very loose definition of the word “temporary”. What you had was a disaster waiting to happen. On 10 July 1926, it happened.

Lightning struck one magazine at the naval depot and set it on fire. This blew and set off two others. Three magazines going up within 25 minutes of each other. About 2 1/2 million pounds of TNT total. There were other, smaller explosions over the next few days, but these three did the main damage. Especially, these three did the killing.

19 people died, 16 of them sailors and marines who went to fight the fires and so ran into the explosions. One was an army officer at Picatinny. A building just collapsed on him. Two civilians also died. One was the wife of the chief clerk – the head civilian – of the Navy depot. The chief clerk was one of 38 injured and he had to keep going all weekend despite his injuries and his wife’s death. He was the one who knew where everything was. The other civilian death was a woman who just picked the wrong afternoon to visit friends – a Navy NCO and his wife – living on the base. Pure bad luck.

There was some good luck. 10 July 1926 was a Saturday. Most people at the two installations just were not working. With 530 employees at Picatinny and I do not know

how many at Lake Denmark, but would be guessing high at 150, if the blast had taken place on a normal workday, a couple of hundred body count would have been light.

I've talked to people who say they or their families felt the ground shock the other side of Boonton one way and Lake Hopatcong the other. A woman who was about 12 at the time said everybody in Wharton headed for Pennsylvania. There was a similar reaction in Kenvil. They thought Hercules had blown.

Remember the hills I mentioned. They are the reasons towns such as Wharton and Dover did not experience serious damage. Ground shock yes, but not the blast itself. Coming off worst of the surrounding towns was Rockaway Borough. It's right at the base of the valley so the hills did not protect it and the blast shattered all the glass in the business district – three miles from Picatinny.

I just completed the annual history for Picatinny for fiscal year 2000 and one of the items it discusses is Picatinny's work in developing lightning safety testing machinery for ammunition storage buildings. We tend to be rather sensitive to lightning issues around here.

The navy installation never really recovered from the disaster. Oh, the Navy did some rebuilding, but it and the Army also did a lot of studying of newer and safer ways to store ammo and applied them to new depots, such as Earle which came on line in 1943. Lake Denmark limped through World War II, but, at a time when Picatinny was running three shifts seven days a week, the navy had to send workers to Picatinny to get in a full weeks work. There was talk of others uses, such as a POW camp or a brig, but the Navy ended up closing it in 1945. Or thought it was the end.

Over in Pompton Plains was a small rocket research company – a real pioneer – called Reaction Motors. However, the citizens of Pompton did not welcome being on the cutting edge of the Space Age. So, it ordered the company out. So, the company agreed to lease test sites at a facility the Navy would set up at Lake Denmark. Hence, the opening in 1946 of what became the Navy Air Rocket Test Station. Among other items tested there were the power packs for Chuck Yeager's X-1 rocket plane, the sound barrier breaker, and the record setting X-15 rocket plane. Also several lunar shuttle engines.

The Navy turned the test area back to the Army in 1960, but rocket testing continued there until 1973, when Picatinny's neighbors became too numerous for such noisy activity.

Please note I left the story of Picatinny in abeyance. As you can guess, it did recover from the explosion, in part because the machinery took the explosion better than the buildings. Another reason for the Picatinny's recovery was the government's appropriation of over \$3 million for repairs. Remember this was in 1930, when a million dollars was worth about a million dollars.

A key decision was to rebuild in place. Just after the blast, U.S. Senator Walter Edge, who also did a couple of terms as Governor of New Jersey – denounced the idea of having such dangerous installations in populated area. However, at the same time he was on the Senate floor denouncing, the mayors of Dover, Wharton, and Rockaway were before the Navy Board on Inquiry into the Explosion pleading to keep both installations in the area. The only community which went on record in favor of moving the bases was Mount Arlington. This reaction may have had a connection to Atlas's move out of the area a few years later.

So, both facilities stayed. I should assure you the government learned a lot about storing explosives since the explosion. It learned a lot of what it now knows from the 1926 explosion. Of course, I can think of 19 people who wished they had learned it earlier.

A lot of rebuilding went on in the late 30s and was done by New Deal alphabet agencies. Without the WPA and others, Picatinny may not have been ready for its busiest period – the first years of World War II.

In these days of a sprawling military-industrial complex -- you know, us -- it is difficult to grasp exactly how unmilitary was this country's pre-World War II economy. When war broke out in Europe in 1939, Picatinny was the only plant capable of loading on any significant scale bombs and large caliber ammunition. This meant it had to carry the load until private industry could handle the job, which was not until well into 1942. One reason private industry could take over was Picatinny experts had spent the 1930s making plans for industrial expansion and went out to the private plants, including many which were and are government owned but contractor operated, and showed them how to set up their production lines.

This was the high point of production at Picatinny. At one point in early '42, the workforce was just under 18,000. Just before the war, it had been about 1,700 and was only about 2,600 just before Pearl Harbor.

Any of you ever live in one of those college or university towns where everybody with space to spare rents it out to students? Well, you have an idea how Morris County was in World War II, only with war workers.

World War II saw number of female workers in the technical fields at Picatinny for the first time. They had been present in administrative and certain industrial areas such as the sewing room, which made powder bags for propellant charges and parachutes for flares. At one the point, women made up just over half the workforce.

World War II also saw employment of African-Americans go from non-existent to about 25 percent of the workforce. There was even recruiting session held at the Apollo Theater in Harlem and direct buses from Harlem to Picatinny. In 1944, Hackettstown became the home to some 300 Picatinny workers, Jamaicans recruited to act as migrant labor for war factories both public and private. Picatinny was actually an improvement because it paid the Jamaicans the same as its regular workers.

Picatinny's research work had served World War II before there was a World War II. For example, before 1926 Arsenal scientists and engineers had collected a good deal of information to determine the stability of smokeless powder and on ways to store the powder to increase the duration of its stability, and more efficient drying processes. Also along these lines were studies to reduce the hygroscopicity of powder, i.e., the powder's moisture retention.

Prior to World War II, the material for cartridge cloth was silk. This would have been a real problem after the Japanese conquered most of the world's silk supply early in the war. Would have been – if a Picatinny scientist had not spent a good deal of the 1930s testing various cotton fibers to find one which replaced the silk. A few years ago, Picatinny came up with a plastic container to replace these bags.

Almost all artillery fuzes, boosters, grenades, and land mines used by the Army in World War II were Picatinny developments. So was the propellant for the Bazooka, the

antitank rocket launcher. Air bombardment – such as the famous 1943 raid on the Ploesti oil fields in Rumania owed much to Picatinny research.

Just to give one example, planes had and have radio friend or foe identification systems to warn them of enemy aircraft attacking. The Army Air Force had a very new and good system at the time, but considered it too good to use for fear it would fall into enemy hands. So, Picatinny developed an explosive charge which would blow the device to pieces if the plane took any shock greater than a normal landing. One Saturday Picatinny technical people received a rush request for 150 devices within 3 days. By Tuesday evening it had 200 on a plane at Newark Airport.

In the course of developing this item, the Selective Service System, dread words to people my age and older, drafted several key personnel on the project. So, in another rush effort, Picatinny had to get them discharged and back on the job within 48 hours.

The end of the war meant severe cutbacks. Just after the dropping of the atom bombs, the arsenal was laying people off at the rate of 1,000 a week and within a year was down to around 2,000 employees – its post war low.

The big cuts were in production. Picatinny did some during the Korean War, but no where nears as much as during the WWII. The high point of personnel was about 7,700 in 1952-53.

During Vietnam, PA did emergency production – specialized items or items needed in a big hurry. What it really wasn't feasible to give to private industry. This kept it busy and together with location of a headquarters here, the population reached 9,000 in 1970. However, this was temporary. Production continued to decline and in 1977 Picatinny became ARRADCOM with full charge of weapons and munitions

research and development for the Army, but no production work except pilot plant work – seeing to it a new product was cheaply and efficiently producible. Even much of this goes to private contractors under Picatinny supervision.

Since World War II, Picatinny's main business has been research and development. Until 1977, it concentrated on large caliber ammunition. It did not take on small caliber ammo and weapons until the government closed other installations in 1970s, especially Springfield Armory in Massachusetts and Frankford Arsenal in Philadelphia. One of Picatinny's earliest research tasks was fuze research, a job it had taken over from Frankford in 1921. So, we picked the Philadelphia arsenal's bones early and late.

From here on this talk would be pretty much bragging. Bragging about how Picatinny delivered an improved bazooka rocket to defeat the heavy tanks the Russians supplied to China and North Korea in 1950, or the grenade rounds and mines, especially the claymore which performed pretty well in Vietnam or the weapons it sent to Operation Desert Storm just 8 years ago.